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Ephemeris of the Satellite of Neptune, 1891–92. By A. Marth.

Greenwich, Noon.	P′	*a*	*b*	*u*−U	Diff.	U	B
1891.	°	″	″	°	°	°	°
Oct. 24	330·34	16·84	9·37	334·43	612·34	122·11	−33·81
Nov. 3	330·13	·89	9·38	226·77	·31	122·37	33·73
13	329·87	·93	9·38	119·08	·28	122·66	33·64
23	329·60	·95	9·37	11·36	·26	122·97	33·54
Dec. 3	329·32	·95	9·34	263·62	·26	123·28	33·44
13	329·05	·93	9·31	155·88	·26	123·59	33·34
23	328·80	·90	9·26	48·14	·28	123·88	33·24
1892.							
Jan. 2	328·57	16·85	9·21	300·42	612·32	124·14	−33·15
12	·38	·79	9·16	192 74	·36	·36	33·06
22	·23	·71	9·10	85·10	·41	·53	33·00
Feb. 1	328·13	·62	9·04	337·51	·46	·65	32·95
11	·08	·53	8·98	229·97	·52	·70	32·92
21	·09	·44	8·93	122·49	·59	·69	32·91
Mar. 2	328·15	·34	8·88	15·08	·65	·62	32·93
12	·26	·25	8·84	267·73	·71	·49	32·96
22	·43	·16	8·81	160·44	612·76	·30	33·01
Apr. 1	328·64	16·09	8·78	53·20		124·05	−33·07

The values of P′, a, b, and $u-\mathrm{U}$ are to be interpolated directly for the times for which the apparent positions of the satellite are required, and the position-angles p and distances s of the satellite are then found by means of the formulæ :

$$s \sin(\mathrm{P}'-p) = a \sin(u-\mathrm{U}),$$
$$s \cos(\mathrm{P}'-p) = b \cos(u-\mathrm{U}).$$

In the May number of the *Monthly Notices*, on page 439, Mr. Isaac Roberts has communicated position-angles of the satellite, which he has deduced from measurements of eight of his photographs of *Neptune*. The strict testing of these angles would require that either a good series of micrometrical measures made during the last opposition should be available or that the changes of the elements of the orbit should be better known than they are at present (cf. the remarks on pp. 459–460 of vol. 49). But though, on account of the existing uncertainty of the shifting of the plane of the orbit, only approximate elements can be made use of, a comparison of the position-angles derived from the photographs with the corresponding computed places will not be without interest, as it sufficiently indicates the uncertainties pro-

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duced by the difficulties of the measurements, which Mr. Roberts has mentioned. The following are the computed places of the satellite at the times corresponding to the beginning, middle, and ending of each exposure, as they are deduced from the elements adopted in the ephemeris published in vol. 50 :—

	Computed Dist.	Computed Posit.	Measured Posit.
1890.	″	°	
Dec. 9	16·62	64·21	
	16·78	62·10	59° 28′
	16·88	60·02	
12	16·82	241·14	
	16·83	240·97	232 10
	16·84	240·79	
1891.			
Jan. 10	14·10	260·27	
	14·25	259·27	261 46
	14·41	258·39	
Feb. 1	13·10	26·76	
	12·86	25·21	31 29
	12·62	23·61	

	Computed Dist.	Computed Posit.	Measured Posit.
1891.	″	°	
Feb. 4	12·70	204·29	
	12·56	203·32	207° 6′
	12·42	202·33	
10	11·51	195·77	
	11·30	194·00	193 55
	11·09	192·16	
20	12·56	267·89	
	12·81	266·18	277 3
	13·06	264·54	
24	16·00	48·03	
	15·91	47·13	44 53
	15·82	46·23	

Ephemeris for Physical Observations of the Moon. By A. Marth.

1891 Nov. 9 to Dec. 25.

Greenwich, Noon.	Selenographical Colong. of the Sun.	Selenographical Lat. of the Sun.	Geocentric Libration. Sel. Long. of the Earth.	Geocentric Libration. Lat. of the Earth.	Geocentric Libration. Combined Amount.	Direction.
1891.	°	°	°	°	°	°
Nov. 9	7·15	+0·28	−5·30	+6·76	8·58	37·9
10	19·32	·25	4·38	6·78	8·07	32·7
11	31·48	·22	3·17	6·38	7·12	26·3
12	43·63	·19	1·73	5·57	5·83	17·2
13	55·77	·16	−0·14	4·38	4·39	1·8
14	67·91	·13	+1·49	2·90	3·26	332·8
15	80·05	+0·10	+3·04	+1·23	3·28	292·1
16	92·18	·06	4·39	−0·51	4·42	263·4
17	104·32	+ ·03	5·46	2·18	5·88	248·2
18	116·46	·00	6·19	3·67	7·19	239·2
19	128·60	− ·03	6·51	4·92	8·15	232·8
20	140·74	·06	6·45	5·86	8·73	227·6
21	152·89	·09	6·03	6·49	8·85	222·7
22	165·05	−0·12	+5·29	−6·79	8·60	217·8
23	177·21	·15	4·30	6·78	8·02	212·2

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